inclusive memory
INCLUSIVE MUSEUMS FOR WELL-BEING AND HEALTH THROUGH THE CREATION OF A NEW SHARED MEMORY

Inclusive Memory

PR5 A1: Guidelines for Designing Open Educational Resources (OER)

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Introduction

Following the planned activities in the project application, Inclusive Memory partners designed the IM OER and IM MOOC for HEIs students in the fields of education, social care and medical sciences, plus other informal learners, as museum professionals, members of cultural associations, and NGOs. This set of activities were conducted in the framework of PR5 project results. Based on the pilot phase, the created OERs and courses were redesigned into MOOC form to be freely available to a large public of (future) museum professionals, social care givers, schoolteachers and healthcare personnel worldwide. The first activity of PR5 consists of PR5 A1 which are the Guidelines for designing OERs. This document reports on this activity.

Definition and importance of OER

Open Educational Resources (OER) refer to freely accessible, openly licensed educational materials that can be used, modified, and shared by educators and learners. The term was first introduced by UNESCO in 2002, defining OER as "teaching, learning, and research materials in any medium—digital or otherwise—that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation, and redistribution by others" (UNESCO, 2019). These resources can be of different types and sizes, ranging from simple educational resources, readings, images, open textbooks, lecture notes, assignments, videos, multimedia content and links, up to complete courses (Teixeira et al., 2013).

The use of OER enhance educational innovations by rapidly disseminating new ways of teaching and learning. Educational resources that can be reused promote collaboration and participation by all. Therefore, OER call for the notion of open educational practices (OEP) which relates to any educational activity involving the creation, use, or dissemination of an adaptive open learning resource (Teixeira et al., 2013; OPAL, 2011). OEP can be best defined as practices which support the (re) use and production of OER in the framework of educational policies that promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning process (Teixeira et al., 2013; OPAL, 2011).

The significance of OER in education is profound, as they promote accessibility, affordability, innovation, and collaboration in learning. It can be stated that Improving Access to Education is the foremost goal of OER. In fact, they remove financial barriers to education by providing free and openly available learning materials. This is particularly beneficial for students in low-income communities and developing countries, where expensive textbooks and resources may not be affordable (Hodgkinson-Williams & Arinto, 2017). By eliminating cost constraints, OER contribute to greater equity in education.

Another major aim of the OER movement has been to enhance teaching and learning practices. OER enable educators to customize learning materials according to students' needs. Unlike commercial textbooks that cannot be modified, OER can be adapted to include local contexts, updated research, and alternative teaching approaches. This flexibility fosters more engaging and relevant learning

experiences (Bliss & Smith, 2017). The open nature of OER also promotes collaboration among educators and institutions worldwide. Teachers can share best practices, co-develop course materials, and contribute to a global pool of knowledge. This collective effort enhances the quality and diversity of educational content (DeRosa & Jhangiani, 2018).

An additional benefit of using OER is to foster innovation in education. The ability to modify and remix OER supports innovative teaching strategies, such as blended learning and flipped classrooms. Educators can integrate OER with digital tools, simulations, and interactive content to create more engaging and effective learning environments (Yuan, MacNeill, & Kraan, 2008).

Finally, unlike proprietary educational materials that become obsolete over time, OER can be continuously updated and improved by the academic community. This adaptability ensures that educational content remains relevant and up to date, contributing to the long-term sustainability of education systems.

Principles of OER: the 5 R framework

One of the key aspects of OER which distinguish them from traditional copyrighted materials, making them highly adaptable to diverse educational needs, is the use of open licenses, such as those provided by Creative Commons. These open licences allow educators and learners to legally use and modify materials.

Another foundational principle guiding OER is the **5R Framework**, developed by David Wiley (2016). This framework defines the essential freedoms that make educational resources truly open: **Retain, Reuse, Revise, Remix, and Redistribute**. These principles ensure that OER are not only freely available but also adaptable, shareable, and sustainable, fostering innovation and collaboration in education.

The 5R Principles of OER

1. **Retain – The Right to Own and Control Copies**
   The first principle of OER ensures that users can make, own, and control copies of the educational materials. Unlike traditional copyrighted resources, which often have restrictions on storage and access, OER allow educators and students to download and keep resources permanently. This prevents issues related to paywalls, licensing expiration, or content removal from proprietary platforms (Wiley, 2016).

2. **Reuse – The Right to Use Content in a Variety of Ways**
   OER can be used in multiple educational contexts, such as in classrooms, online courses, study groups, and presentations. Unlike copyrighted materials that may impose strict limitations on how content can be used, OER provide the flexibility to incorporate resources into various teaching and learning scenarios without legal restrictions (Bliss & Smith, 2017).

3. **Revise – The Right to Modify and Adapt**
   A key advantage of OER is that educators and learners can revise the content to better suit their needs. This means updating outdated information, translating materials into different languages, or adjusting examples to reflect local cultures and contexts. By allowing modifications, OER promote inclusivity and personalization in education (Hodgkinson-Williams & Arinto, 2017).

4. **Remix – The Right to Combine with Other OER**
   The remix principle enables users to merge multiple OER sources to create new, innovative learning materials. For example, an instructor might combine an open-access textbook with freely available videos, quizzes, and interactive activities to design a customized course. This principle encourages creativity and collaboration, enabling educators to build upon each other's work (DeRosa & Jhangiani, 2018).

5. **Redistribute – The Right to Share with Others**
   The final principle ensures that once a user has retained, reused, revised, or remixed an OER, they can freely share their modified version with others. This creates a cycle of continuous improvement, where updated and enhanced resources benefit the broader educational community. Open licensing, such as Creative Commons, facilitates this process by clearly defining how materials can be legally shared.

By embracing these principles, educators and institutions can foster a culture of openness, collaboration, and innovation in education.

Key Guidelines for Designing OER

To maximize their impact, OER must be carefully designed to ensure accessibility, usability, and adaptability. Effective OER design follows specific guidelines that address content quality, technical standards, legal considerations, and user experience. This essay outlines key guidelines for designing OER, drawing on best practices and scholarly insights.

1. Content Development and Pedagogical Effectiveness

Regarding this topic, OER should align with educational objectives and be structured to enhance learning. Content should be accurate and reliable. Materials should be fact-checked by their respective authors and based on credible sources (Hodgkinson-Williams & Arinto, 2017). OER designers must also consider incorporating multimedia elements such as videos, quizzes, and simulations can improve learner engagement in order to make the materials engaging and interactive for users (DeRosa & Jhangiani, 2018). Most importantly, OER should reflect diverse perspectives and be adaptable to different cultural and linguistic contexts (Bliss & Smith, 2017).

2. Findability, accessibility and (re)usability

For OER to be widely used, they must be findable, technically accessible and compatible with different platforms. Typically, key technical guidelines include the use of open formats, mobile-

friendliness and accessibility compliance. In fact, materials should be available in universally accessible formats such as PDF, HTML, and EPUB, avoiding proprietary file types. In addition, as many learners access content via smartphones, OER should be optimized for mobile devices (UNESCO, 2019). Finally, OER designers should follow Web Content Accessibility Guidelines (WCAG) as to ensure that materials are usable by people with different kind of disabilities.

It should be noted though that "equal opportunity" not only refers to the accessibility of the resource but also covers the conceptual content accessibility of the resource. In accordance, the principles of perception and understanding of the WCAG should be extended to the content of the resource (pedagogical / cognitive accessibility), and classify the resources from evaluations by users, experts and end users, considering the different types of disabilities and educational resource pedagogical purpose (Teixeira et al., 2013).

3. Licensing, legal Considerations and ethical and responsible (re)use of OER

As referred in the previous section, a key element for ensuring that OER remain open and adaptable, is the use of appropriate licenses. OER designers must therefore pay particular attention to open license their materials. The best known and most commonly used open license are the Creative Commons (CC). In fact, Creative Commons has developed a comprehensive system that allows designers to choose the most appropriate type of license for each particular material. By releasing OER under open licenses such as CC BY (attribution) or CC BY-SA (share-alike) allows reuse and modification, which are of critical importance (Wiley, 2016). However, in an institutional environment, as universities, typically the most used type of licensing is CC BY NC SA, which means materials can be changed or remixed, given that the users shared the alike, but cannot be used for commercial purposes.

Within the Inclusive Memory Consortium, which includes universities, a municipal in-house company and NGOs, the discussion on the most appropriate type of licensing to be used is complex as some organisations prefer to adopt the CC BY license which is the most open and allows for commercial use or reuse of the materials. In the case of Inclusive Memory project, we suggest selecting the CC BY NC SA as standard given it complies with universities policies. Anyway, proper citations and acknowledgments of original creators are paramount as it helps maintain an ethical and responsible use of the OER (DeRosa & Jhangiani, 2018).

4. Sustainability and Community Engagement

Being a digital reusable resource, an OER contributes to decrease the carbon footprint and thus is a more sustainable kind of learning material. In accordance, designers should create them for long-term use and continuous improvement. These resources should be regularly updated to remain relevant and accurate (Hodgkinson-Williams & Arinto, 2017). Therefore, design should encourage user contributions. Within the Inclusive Memory project design activities, the implementation of innovative design methods such as "Crowd Creation" is recommended.

Additionally. using open-source models that allow educators to improve and localize content enhance the sustainability of OER. Another major element is findability, already mentioned regarding the technical aspects. The best way to increase findability and visibility is to deposit the OER in repositories, either from institutions, relevant networks or curated by major academic or professional

organisations. In the case of the Inclusive Memory project as the OER will be part of the MOOC, this should be located in an institutional platform, with links inserted in the different partners web presence locations (institutional portals and websites).

Best Practices and Case Studies

OER have transformed global education by making high-quality learning materials freely accessible. However, effective implementation requires adherence to best practices and learning from successful case studies. We have selected four major OER repositories from very different regions which give a global view of the current state of art.

1. MIT OpenCourseWare (OCW) – USA

MIT launched its OpenCourseWare (OCW) initiative in 2001, offering free access to lecture notes, assignments, and videos from thousands of courses. This is the most well-known OER repository and has served as world reference fro many years. From its experience, we have learned that open access to world-class education increases global learning opportunities. This is especially the case when there is institutional commitment, which is crucial for long-term sustainability of the initiative. The OCW offers structured courses with supplementary materials thus enhancing usability. Its impact has Inspired similar projects worldwide, such as Harvard's Open Learning Initiative and Yale Open Courses. Its is used by over 300 million learners globally (MIT OCW, 2023).

2. OpenStax – USA

OpenStax, founded by Rice University, is another one of the oldest and most well-known OER repositories. It provides high-quality, peer-reviewed open textbooks for college students. The cost savings encourage student adoption and partnerships with nonprofit organizations (NGOs) and governments ensure financial sustainability. It also provides supplementary resources, as quizzes and instructor guides, enhancing usability. The repository is used by 6 million students annually in over 140 countries (OpenStax, 2023).

3. OpenLearn - UK

An initiative launched in the UK, the Open University UK (OUUK) is the OpenLearn, which began in 2006, funded by The William and Flora Hewlett Foundation (foundation that stands out for leading numerous OER initiatives). The main difference between this initiative and the MIT OCW is that this does not only provide a selection of materials available for free use, but it also provides tools to help all those who wish to develop and publish educational resources, with the goal of simultaneously build communities of students and educators through various tools and strategies.

3. African Virtual University (AVU) OER Repository – Africa

The African Virtual University (AVU) launched a multilingual OER repository, providing free educational content in English, French, and Portuguese. It has proven that localization and multilingualism are critical for effective OER adoption. Additionally, it should be noted that Institutional collaboration between African universities improved content diversity. Another

important feature includes mobile friendliness of resources which helped reach underserved communities. Over 1.5 million users from 50 African countries have accessed AVU's OER (AVU, 2023).

4. National Repository of Open Educational Resources (NROER) – India
India's NROER provides digital textbooks, simulations, and interactive materials for K-12 education, developed by the National Council of Educational Research and Training (NCERT). The initiative has demonstrated how Government-led OER initiatives increase nationwide adoption, but also as integration with teacher training programs boosts impact. Over 20,000 OER resources are available in multiple Indian languages. Millions of students and teachers access the platform annually (NROER, 2023).

Other well-known repositories which store open content and hosts collections of OERs include:
Ariadne (EU)
http://www.ariadne-eu.org/
Economics Network Online Learning and Teaching Materials (UK)
http://www.economicsnetwork.ac.uk/links/othertl.htm
FREIburger Multimedia Object Repository (Germany)
http://freimore.uni-freiburg.de
Lab Space (UK)
http://labspace.open.ac.uk/
Merlot (US)
http://www.merlot.org United States
National Learning Network (UK)
http://www.nln.ac.uk/ United Kingdom
OER Commons (US)
http://oercommons.org/ United States
OER Online Archive
http://www.archive.org/ Undefined

Challenges and recommendations

Designing and implementing OER effectively comes with various challenges, including issues related to quality assurance, accessibility, sustainability, and adoption. One of the major concerns regarding OER is ensuring content accuracy, reliability, and academic rigor. Unlike traditional textbooks that undergo rigorous peer review, OER are often created by individuals or small teams with varying levels of expertise. Inconsistent review processes can lead to outdated or incorrect information. The lack of standardization across platforms makes it also difficult to verify the credibility of resources (Wiley, 2016).

To improve the credibility and reliability of OER it is advisable to Implement peer review systems, where subject matter experts evaluate OER before publication (Bliss & Smith, 2017), and encourage community-driven feedback, allowing educators and learners to flag inaccuracies and suggest improvements.

As referred in the previous sections, another major challenge relates to ensure accessibility and Inclusivity. In fact, while OER are meant to be freely available, many resources fail to meet accessibility standards. As demonstrated in recent years, not all learners have reliable internet access or the necessary devices to access OER (UNESCO, 2019). In addition, many OER fail to adhere to Web Content Accessibility Guidelines (WCAG), making them inaccessible to visually impaired or hearing-impaired learners (Burgstahler, 2015). Last, but not least, producing OER in just one language, usually English, limits their usability for users who are not native speakers.

To make OER more inclusive and accessible, it is important to design resources following Universal Design for Learning (UDL) principles, ensuring content is available in multiple formats (audio, text, video, and interactive elements). Another important element is to translate materials into multiple languages and encourage localization efforts for different cultural contexts. Finally, it should be developed offline-accessible OER, such as downloadable PDFs and mobile-friendly versions, to bridge the digital divide (UNESCO, 2019).

Developing and maintaining OER requires long-term investment, yet many projects struggle with sustainability. The lack of institutional funding makes it difficult to regularly update and improve resources. Over-reliance on temporary funding can lead to project discontinuation once initial funding runs out. The involvement of the community is therefore critical. Similarly, it should be encouraged the dissemination of open pedagogical practices, where students and educators collaborate to create, revise, and improve OER.

Conclusions

OER play a transformative role in education by promoting inclusivity, affordability, and innovation. By breaking down financial and legal barriers, they empower learners and educators worldwide with high-quality educational resources. As more institutions and governments recognize the benefits of OER, their adoption and development are expected to grow, further revolutionizing education in the digital age. In this report a set of guidelines for designing OERs have presented, stressing the importance of designing accessible and inclusive materials, which convey accurate and verified information, apply open licenses, and promote user engagement and co-creation. The set of guidelines were designed bearing in mind the adaptability to the specific topic and target audiences of the Inclusive Memory project MOOC.

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